

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
29 April 2004 (29.04.2004)

PCT

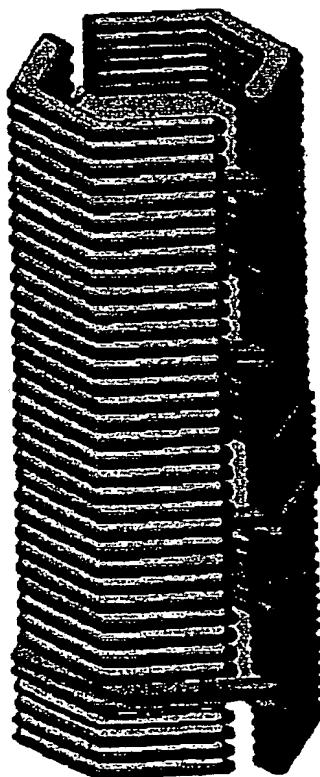
(10) International Publication Number
WO 2004/035883 A2

- (51) International Patent Classification⁷: **D01F**
- (21) International Application Number:
PCT/KR2003/002182
- (22) International Filing Date: 17 October 2003 (17.10.2003)
- (25) Filing Language: Korean
- (26) Publication Language: English
- (30) Priority Data:
10-2002-0063641 17 October 2002 (17.10.2002) KR
10-2003-0049472 18 July 2003 (18.07.2003) KR
10-2003-0049473 18 July 2003 (18.07.2003) KR
- (71) Applicant (for all designated States except US): NEXEN NANO TECH CO., LTD [KR/KR]; 373-1 Guseong-dong, Yaiseong-gu, Daejeon 305-701 (KR).
- (72) Inventors: YOON, Seong Ho [KR/KR]; 152-1 Shinsong-dong, Yuseong-gu, Daejeon 305-805 (KR). ISAO, Mochida [JP/JP]; Kashii 2-chome 28-10, Higashi-gu., Fukuoka 813-0011 (JP).
- (74) Agent: YOU, Byung Sun; 610 Mannyun Officetel, 241 Walpyung-dong, Seo-gu, Daejeon 302-282 (KR).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM).

[Continued on next page]

(54) Title: FIBROUS NANO-CARBON AND PREPARATION METHOD THEREOF

(57) **Abstract:** This invention relates to fibrous nanocarbons, especially to ladder-structured and pair-structured fibrous nanocarbons, and the preparation thereof. Specifically, the fibrous nanocarbons of this invention, which are designed to be used for molecular composite materials, fuel cell catalyst supports, organic reaction catalyst supports, gas storage of methane and hydrogen, electrodes or conductors for lithium secondary battery, and electrodes for electric double layered capacitor, are characterized by the graphite-like structure with the sp^2 hybrid carbon content of more than 95 % per total content; the interlayer spacing (d_{002} , d-spacing of C (002) profiles determined by X-ray diffraction method) of 0.3360nm ~ 0.3700nm; the (002) plane stacking of more than 4 layers (or 1.5 nm); the aspect ratio of more than 10; the fiber cross-section width/thickness of 5nm ~ 500nm; and the ladder-like and pair structure with no continuous hollow core.



WO 2004/035883 A2